

REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 17-30 and 31 (misnumbered as claim 32) were pending, with claims 25-29 and 31 (misnumbered as claim 32) having been withdrawn from consideration. By the present response, claims 17-21, 24 and 31 have been amended and claims 32-34 have been added. Thus, upon entry of the present response, claims 17-34 remain pending and await further consideration on the merits.

Support for the foregoing amendments can be found, for example, in at least the following locations in the original disclosure: page 3, lines 16-19 and 25-26; page 4, lines 2-14 and 21-22; page 10, lines 31-34; and the original claims.

ELECTION/RESTRICTION

In paragraphs 2-7 of the Official Action, the Examiner requires election from amongst Groups I-III, and, with respect to Group II, election of species (a) or (b). Applicants hereby confirm the provisional election of Group I (claims 17-24 and 30). Applicants also elect, with respect to Group II, species (a). Both elections are made with traverse.

The basis for the traversal is that both requirements clearly violate the express direction contained in the Administrative Instructions under the PCT (Appendix A1 of the Manual of Patent Examining Procedure). More specifically, as set forth in Annex B of the Administrative Instructions, it is stated:

(c) Independent and Dependent Claims. Unity of invention has to be considered in the first place only in relation to the independent claims in an international application and not the dependent claims. By "dependent" claim is meant a claim which contains all the features of another claim and is in the same category of claim as that other claim (the expression "category of claim" referring to the classification of claims according to the subject matter of the invention claimed for example, product, process, use or apparatus or means, etc.).

(i) If the independent claims avoid the prior art and satisfy the requirement of unity of invention, no problem of lack of unity arises in respect of any claims that depend on the independent claims. In particular, it does not matter if a dependent claim itself contains a further invention. Equally, no problem arises in the case of a genus/species situation where the genus claim avoids the prior art.

(e) Combinations of Different Categories of Claims. The method for determining unity of invention under Rule 13.2 shall be construed as permitting, in particular, the inclusion of any one of the following combinations of claims of different categories in the same international application:

(i) in addition to an independent claim for a given product, an independent claim for a process specially adapted for the manufacture of the said product, and an independent claim for a use of the said product ...

Claim 17 is clearly directed to a product. Claim 25 is clearly directed to a method of making the product of claim 17. Claim 31 (previously misnumbered as claim 32) is clearly directed to a method of using the product of claim 17. Thus, consistent with the Administrative Instructions reproduced above, all three independent claims should be considered together in a single application. There is clearly no lack of unity between claims 17, 25 and 31.

Moreover, as explained herein, the independent claims are patentably distinct over the applied prior art. Thus, no problem of lack of unity arises with respect to any claims that depend on the independent claims. Therefore, the restriction/election requirements are improper and should be withdrawn.

In addition, any examination on the merits of claim 25, or any claim dependent thereon must occur in a non-final Official Action.

CLAIM OBJECTIONS

The Examiner indicates in paragraph 9 of the Official Action that claim 31 is not present in the claim listing. Claim 32 has been amended to address the objection. Thus, reconsideration and withdrawal of the objection is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 17-22 and 30 stand rejected under 35 U.S.C. §102(b) as being anticipated by WO 95/35152 to Chen et al. (hereafter "*WO 152*") and U.S. Patent No. 5,057,483 to Wan (hereafter "*Wan*") on the grounds set forth in paragraph 11 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The present invention is directed to a composition based on zirconium oxide and oxides of cerium, lanthanum and another rare earth element. Compositions formed according to the present invention are especially suitable for use as multifunctional catalysts. Compositions formed according to the principles of the present invention also exhibit exceptional surface area stability under high temperatures. This surface area stability enhances the catalytic effect of the composition. A composition formed according to certain aspects of the present invention is set forth in amended claim 17. Amended claim 17 recites:

17. A composition based on zirconium oxide comprising cerium oxide in an atomic ratio $Zr/Ce > 1$, and in addition comprising lanthanum oxide and an oxide of a rare earth other than cerium and lanthanum, the composition having a sulphur content below 200 ppm, wherein after calcination for 6 hours at 1150°C it has a specific surface of at least $10\text{ m}^2/\text{g}$.

As evident from the above, the composition of claim 17 requires, *inter alia*, zirconium oxide, cerium oxide, lanthanum oxide, and an oxide of a rare earth other than cerium and lanthanum, as well as a surface stability characteristic such that after calcination for 6 hours at 1150°C , the composition exhibits a specific area of at least $10\text{ m}^2/\text{g}$. Neither *WO '152* nor *Wan* anticipate the composition defined in amended claim 17.

Initially, applicants note that claim 24 was not rejected as being anticipated by *WO '152* and *Wan*. Original claim 24 specified that the composition was "sulphur-free." As set forth, for example, on page 4, lines 19-23 of the present specification, "sulphur-free" means that "the sulphur content is below 200 ppm" By the present response, claim 17 has been amended so as to incorporate this limitation into claim 17. Thus, since original claim 24 was not rejected as being anticipated by *WO '152* and *Wan*, it would likewise be inappropriate to reject amended claim 17 on the same grounds.

As further evident from the above, claim 17 also requires that the composition exhibit a surface area stability such that "after calcination for 6 hours at 1150°C it has a specific surface of at least $10\text{ m}^2/\text{g}$." In this regard, it is asserted in paragraph 11 of the Official Action that: "*Wan '483* discloses that a ceria-stabilized zirconia powder of 12% by weight ceria has a surface area of $55\text{ m}^2/\text{g}$ " (column 12, lines 26-28). Applicants respectfully traverse the assertion that this portion of the *Wan* disclosure

is somehow germane to the above-quoted surface area stability characteristic of the presently claimed invention.

The above-quoted portion of the *Wan* disclosure simply has no relevance whatsoever to surface area stability at temperatures on the order of 1150°C. The above-quoted portion of the *Wan* disclosure clearly fails to specify at what temperature the surface area of 55 m²/g was measured. Thus, this portion of the *Wan* disclosure clearly fails to indicate the level of surface area stability required by amended claim 17. Given the surface area figure described by *Wan* the most likely scenario is that this surface area is measured after calcination of the product of a precipitation or similar reaction. Such calcination steps used to form the material, not test the surface area stability thereof, is typically performed on the order of 400°C to 500°C. Such temperatures are less than half of that specified in claim 17. Thus, for at least these reasons, the above-quoted portion of the *Wan* disclosure fails to disclose, or even suggest, the surface stability characteristic required by the composition of claim 17.

In addition, the surface area value of 55 m²/g described by *Wan* is associated with a composition composed only of ceria-stabilized zirconia. By contrast, the surface area value recited in claim 17 is associated with a composition which includes a combination of four oxides, twice as many oxides as that of the composition described by *Wan*. Therefore, for at least this additional reason, the cited portion of the *Wan* disclosure is irrelevant to the surface area stability characteristic required by amended claim 17.

It is further asserted in paragraph 11 of the Official Action that: "it appears that the claimed composition and that taught in the prior art are substantially identical

and thus these other properties must be inherent." This assertion is respectfully traversed.

When assertions are made based upon features that are not expressly disclosed in the prior art, the Federal Circuit has repeatedly stated that in order to establish the inherency of the missing element it must be shown that the missing element must necessarily be present in the reference, and would be recognized as such by those persons of ordinary skill in the art. *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991; *In re Oelrich*, 666 F.2d 578,581, 212 USPQ 323, 326 (C.C.P.A. 1981) ("inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient"); *Standard Oil Co. v. Montedison, S.p.A.*, 664 F.2d 356, 372, 212 USPQ 327, 341 (3d Cir. 1981) (for a claim to be inherent in the prior art it "is not sufficient that a person following the disclosure sometimes obtain the result set forth in the [claim]; it must invariably happen").

When considered in light of the appropriate legal standards set forth above, it is clear that the recited surface area stability characteristic of amended claim 17 is not inherent to the composition of either *WO '052*, *Wan '483*, or any potential combination of the two.

One of the deficiencies of the above-quoted assertion of inherency is that it fails to consider factors, other than composition, which clearly effect the properties of the resulting product.

For instance, the high temperature surface area stability of the composition of the present invention results, at least in part, from the process by which it is prepared

which comprises two specific aspects: (i) a precipitation step carried out by mixing a basic compound in compounds of zirconium, cerium, lanthanum and another rare earth element, specifically wherein the zirconium compound comprises a sol; and (ii) recovery of the precipitate which has been obtained from the precipitation step, heated in an aqueous medium." In particular, with respect to aspect (i), the use of a zirconium sol is to be contrasted with the typical use of a zirconium salt, as practiced, for example, in the process of *WO '152* and *Wan*. Therefore, for at least the reasons set forth above, the high temperature surface area stability characteristic of the composition of the present invention is clearly not inherent to the products of *WO '152* or *Wan*, based at least in part on important differences and their methods of preparation, which can clearly result in differences in properties exhibited by the products obtained thereby. In this regard, applicants note that the structure implied by process steps should be considered when assessing patentability where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979).

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 17-24 and 30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *WO '152* and *Wan* on the grounds set forth in paragraph 14 of the Official Action. This rejection should be withdrawn.

For at least the reasons explained above, *WO '152* and *Wan*, taken alone or in combination, fails to disclose or suggest at least the high temperature surface area stability characteristic required by amended claim 17. In this regard, it is asserted in

paragraph 14 of the Official Action that: "Regarding surface areas, the claimed limitations are not given patentable weight for the reasons discussed above."

However, applicants cannot find any satisfactory reasons previously discussed in the Official Action which would justify ignoring this requirement of the presently claimed invention. Should the grounds for rejection be maintained, applicants respectfully request that the Examiner specifically identify the basis for refusing to consider the above-mentioned high temperature surface area stability requirement of the presently claimed invention.

Possibly recognizing the weakness in this position, it is further asserted in paragraph 14 of the Official Action that:

Alternatively, it would be obvious to create a stable compound at high temperature of the composition taught in WO '152 because it is used at high temperatures, such as those of 900°C or more (page 10, lines 30-31). It would be obvious to one of ordinary skill in the art to create a material, well stabilized by rare earth oxides as taught by Wan '483, which does not undergo phase transition at a temperature anywhere close to that of operating temperature. Since the starting surface areas of the zirconia composite taught in Wan '483 are equal to or above the surface areas as recited in the instant claims, it would have been obvious that a properly stabilized composition would have the same surface area after any calcinations. A higher surface area would be desired in order further disperse catalyst onto the composition, as rhodium is dispersed in Wan '483 (col. 8, lines 38-39). In addition, it would be desirable for the composition to be thermally stable, and the retention of surface area is a correlating result. Therefore, the claimed surface areas after calcination is not found patentable over the prior art. (Emphasis added)

First, the above-quoted grounds for rejection appear to confuse the concepts of inherency and obviousness. In this regard, it is legal error to rely upon inherency has some form of substitute for a teaching or suggestion supporting an assertion of obviousness:

[A] retrospective view of inherency is not a substitute for some teaching or suggestion which supports the selection and use of the various elements in the particular claim combination. *In re Newell*, 13 QSPQ2d 1248, 1250 (Fed. Cir. 1989)

In addition, for at least the reasons explained above, neither *WO '152* nor *Wan* contain any teaching whatsoever which would indicate that the compositions described therein must necessarily possess the high temperature surface area stability characteristic required by amended claim 17. Finally, while the above-quoted grounds for rejection contain assertions about the motive as to why one of ordinary skill in the art would have wanted to produce the composition of the presently claimed invention, the grounds for rejection sorely lack any explanation of how one of ordinary skill in the art would have modified the teachings of *WO '152* and *Wan* in a manner so as to arrive at the composition of amended claim 17. Thus, the grounds for rejection clearly fail to satisfy the Graham v. John Deere factors. The grounds for rejection clearly fail to establish a *prima facie* case of obviousness and should be withdrawn.

CONCLUSION

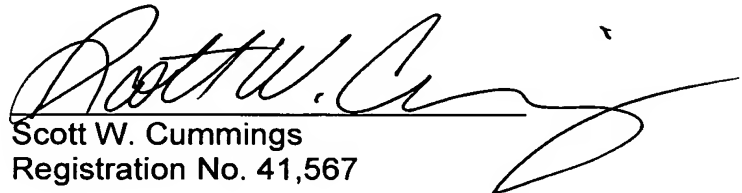
From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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